

# PATENT SPECIFICATION

## DRAWINGS ATTACHED

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### COMPLETE SPECIFICATION

#### Improvements in or relating to Machines for the Manufacture of Compression Spring Strips from Wire, for example for Upholstery Inserts

I, WILLI GERSTORFER, of 8 Glanegg, Grödig bei Salzburg, Land Salzburg, Austria, an Austrian citizen, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a machine for the manufacture of a compression spring strip which consists of a continuous wire of steel or the like and serves for the formation of spring inserts for cushions and the like and in which each right-hand compression spring coil is followed with the interposition of a connection portion by a left-hand compression spring coil approximately parallel to the right-hand compression spring coil and so on alternately.

The invention is intended to provide such a machine which avoids the disadvantages of known machines by eliminating the need for manual work and providing a storage arrangement for the compression spring strip.

Such a machine according to the invention is characterised in that the tools serving for the shaping of the wire, inclusive of tools for producing the curvature of the wire and for determining the amount and direction of the lead of the coils, are arranged in a shaping head which is pivotally movable in relation to the direction in which the spring strip is drawn off, and that the movable tools serving for shaping the wire are coupled with the drive means for the pivotal movability of the shaping head in synchronism.

Further and optional features of the invention appear from the following description and the appended claims.

A machine in accordance with the invention is illustrated partly diagrammatically

and by way of example in the accompanying drawings, in which

Fig. 1 is a diagrammatic side view of the machine,

Fig. 2 is a side view illustrating the shaping head, and

Fig. 3 illustrates the hooking together of the spring coils in the completion of the compression spring strip.

The illustrated machine comprises a shaping head 1 mounted by means of two bearing plates 2 for pivotal movement about an axis 4. The shaping head 1 is provided in its lower end portion with a shaft 5, which is rotatably mounted and supported by the bearing plates 2. The upper end of the shaft 5 is continued by a hook-shaped wire guide, which consists of two firmly connected parts, namely, an inner arcuate member 9 and an outer arcuate member 6. The shaft 5 is formed with a central longitudinal bore, which slidably receives the wire. This bore is continued by a passage defined by and between the arcuate members 6 and 9 and terminating at the outlet 8. A U-shaped bracket or support 7 is rigidly connected to the shaft 5 and the arcuate members 6 and 9 and provides bearing means for the linkage for the bending roller and the lead pocket, which linkage will be described hereinafter. A sleeve 10 is axially slidably mounted on the shaft 5. It carries an upwardly extending rod 11, which is axially slidably mounted in the bracket 7 and has pivoted to its upper portion at 12 another rod 13, the upper end of which is pivotally connected by a pivot 14 to one arm 15 of a bell-crank lever pivoted to the arcuate member 9 at 17. A bending roller 18 is rotatably mounted in the other arm 16 of the bell-crank lever. The sleeve

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is due to the trapezium shape of the compression spring strip will always ensure that the compression springs engage each under an appropriate stress. A modified device may be subsequently arranged when it is desired to manufacture spring strips of different type, e.g., spring strips in which the turns are interlaced rather than hooked together.

The manufactured compression spring strip can be stored by winding it on a reel 47.

Various modifications are possible within the scope of the invention. This applies particularly to the means for driving the various elements.

#### WHAT I CLAIM IS:—

1. A machine for the manufacture of a compression spring strip which consists of a continuous wire of steel or the like and serves for the formation of spring inserts for cushions and the like and in which each right-hand compression spring coil is followed with the intercession of a connection portion by a left-hand compression spring coil approximately parallel to the right-hand compression spring coil and so on alternately, the machine being characterized in that the tools serving for the shaping of the wire, inclusive of tools for producing the curvature of the wire and for determining the amount and direction of the lead of the coils, are arranged in a shaping head which is pivotally movable in relation to the direction in which the spring strip is drawn off, and that the movable tools serving for shaping the wire are coupled with the drive means for pivotal movability of the shaping head in synchronism.

2. A machine according to claim 1, characterized in that the wire guide initially extends approximately in the middle of the pivotal axis of the shaping head and then extends in known manner along an arc relative to said axis, and that a bending roller, known *per se*, is disposed in an adjustable position at the outlet end of the wire guide.

3. A machine according to claim 2, characterized in that the bending roller is arranged on a linkage which is axially displaceable in the direction of the pivotal axis of the shaping head and comprises a surface

of a solid of revolution having an axis lying in the pivotal axis of the shaping head, on which surface of a solid of revolution acts an adjusting member which is adjustable in a direction which is substantially parallel to said pivotal axis of the shaping head.

4. A machine according to any one of claims 1 to 3, characterised in that the tool serving for imparting the lead is constructed as a pocket in the form of two spaced parallel plates or the like, which are pivotally mounted in a support connected to the shaping head.

5. A machine according to claim 4, characterised in that the pocket is pivotally movable through the intermediary of transmitting means, such as for example a screw of steep pitch together with moving nuts, by a drive member which is displaceable parallel to the axis of the shaping head and which comprises a surface of a solid of revolution having an axis lying in the pivotal axis of the shaping head, which surface of a solid of revolution is engageable by an adjusting member which is adjustable in a direction which is substantially parallel to the pivotal axis of the shaping head.

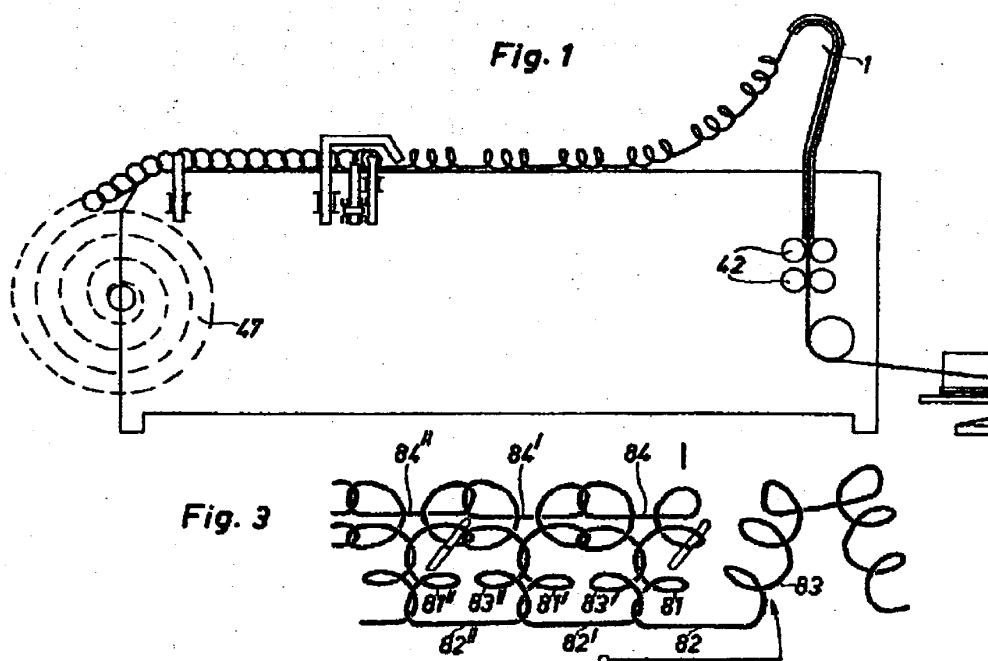
6. A machine according to any one of claims 1 to 5, characterised in that inserted after the shaping head is a device for hooking each compression spring to the preceeding one and suited in its working movements to the production output of the shaping head.

7. A machine according to claim 6, characterised in that a winding drum or like storage arrangement is arranged following the device for hooking.

8. A machine for the manufacture of compression spring strips, substantially as described hereinbefore with reference to and as shown in Figs. 1 and 2 of the accompanying drawings.

9. A compression spring strip comprising right-handed compression springs and left-handed compression springs in alternation, whenever manufactured by a machine as claimed in any of claims 1 to 8.

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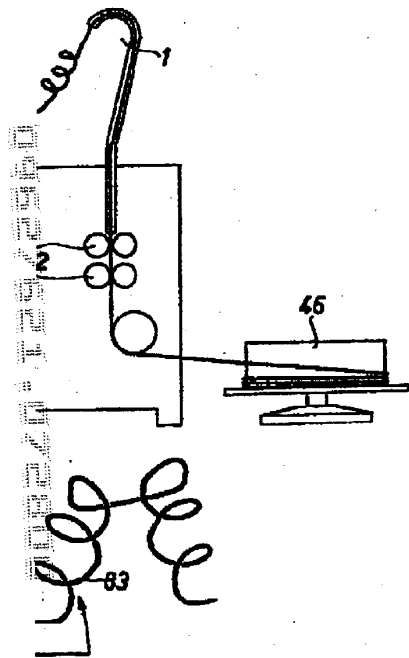
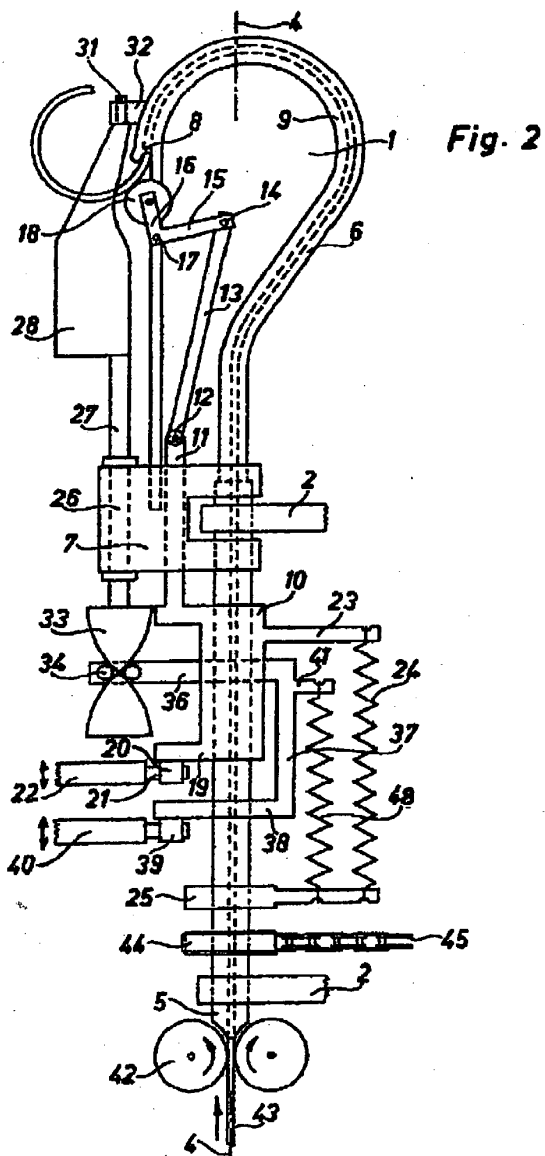


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## 937,644 COMPLETE SPECIFICATION

2 SHEETS

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the Original on a reduced scale.  
SHEETS 1 & 2



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